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Magdalena Smeds, Jason Martin, Mattias Elg & Ida Gremyr

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## RESEARCH ARTICLE

# Why won't you leave the process alone? Exploring emotional, motivational and cognitive mechanisms triggering tampering

Magdalena Smeds <sup>a\*</sup>, Jason Martin <sup>a</sup>, Mattias Elg <sup>a</sup> and Ida Gremyr <sup>b</sup>

<sup>a</sup>Department of Management and Engineering and HELIX Competence Centre, Linköping University, Linköping, Sweden; <sup>b</sup>Department of Technology Management and Economics, Chalmers University of Technology, Gothenburg, Sweden

Quality management focuses on improvements aimed at enhancing the value created for various stakeholders. However, actions taken in response to a perceived problem sometimes lead to an inferior result rather than an improvement. Such actions have been denoted tampering. As an example, natural variation might unnecessarily be perceived as a problem, where the best way to handle that 'problem' would be to not act at all. However, for someone trained in quality management and striving for improvement, doing nothing might be more challenging than acting. The research question studied in this paper is: How do emotional, motivational and cognitive mechanisms influence tampering in problem-solving situations? Through interviews with 17 respondents, 33 tampering situations were identified and analysed. The findings describe emotional, motivational and cognitive mechanisms that lead individuals to take actions leading to tampering. Some examples of these mechanisms are fear of the consequences of not acting, feelings of guilt if not acting to resolve a problem, and taking actions based on experiences of past problem-solving. To counteract this, it is advised to set aside time for reflections before starting problem-solving and to establish an environment encouraging of reflections.

**Keywords:** tampering; motivation; emotion; cognition; variation; quality management

## Introduction

Deming (1989) put forward a view of organisations as interlinked processes and practices related to designing, controlling and improving processes that has since formed a central understanding of quality management (Hackman & Wageman, 1995; Hammer, 2015). Aligned with this view, process management has been advised to operationalise the key principles of customer and stakeholder focus, continuous improvement and teamwork (Dean Jr & Bowen, 1994; Gremyr et al., 2020). However, the desire to improve and solve problems within processes sometimes leads to situations where the actions taken do not result in improvements or, as a worst case, have a negative impact on the process itself. Such actions, taken in response to a non-existing problem, are – by Deming (1993) – denoted as tampering, defined by Smeds (2021) as '[a] response to a perceived problem in the form of an action that is not directed at the fundamental cause of the problem, which leads to a deterioration of the process or the process output' (p. 47). This

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\*Corresponding author. Email: magdalena.smeds@liu.se

definition implies that tampering occurs both when not taking action when an action is required and taking action when no action is required. This paper focuses on the latter.

Tampering has been identified in various situations (Georgantzas, 2018; Van Gestel et al., 2015), and it is sometimes discussed in relation to Deming's classic funnel experiment (Hanna, 2010). The extent of tampering is unknown, but it is assumed that actions leading to tampering are widespread in organisations (albeit not always labelled as tampering) and conducted both by first-line employees (Van Gestel et al., 2015) and managers (Georgantzas, 2018). A classic example of tampering is when operators needlessly adjust machine settings, taking unnecessary time and personnel resources. Another example is that healthcare systems artificially increase variability in patient flows due to mismanagement (e.g. Allder et al., 2011). Another example is the challenge of using big data in support of decision-making where crude, inappropriate big data-based prediction methods are used in highly complex decision-making contexts, which may induce tampering in terms of unnecessary or faulty decisions (Athey, 2017). Overly trusting off-the-shelf machine learning applications in resource allocation prediction models may lead to less appreciation of complexity and result in skipping or severely reduce further analysis, thereby leading to tampering (Athey, 2017). Thus, tampering has negative consequences for operational processes in a wide variety of situations, leading to deteriorating quality (Georgantzas, 2018) and decreased process efficiency (Van Gestel et al., 2015).

Moving beyond the actions that cause tampering to the individuals who take those actions, scholars have addressed a need for empirical research on the behavioural mechanisms that affect individuals conducting problem-solving in general (Galeazzo & Furlan, 2021; Tucker et al., 2002) and performing tampering in particular (Hanna et al., 2020; Van Gestel et al., 2015). In this paper, we address this by directing attention towards behavioural mechanisms influencing an individual's behaviour (Danermark et al., 2019) that trigger actions leading to tampering.

There is an extensive amount of literature suggesting that emotions, motivation and cognition have a significant influence on individuals' behaviour. Lerner et al. (2015) suggest that emotional mechanisms, such as fear and a lack of control, can have both positive and negative influence on decision-making. Another mechanism is motivation (Güss et al., 2017; Simon, 1967), which concerns the strive towards a certain goal (Simon, 1967). Motivation can be intrinsic and driven by an individual's own desire or extrinsic and driven by external factors, such as rewards (Benabou & Tirole, 2003). Cognition refers to the mental act of acquiring, recognising and processing information (Fiske & Taylor, 1991). Cognitive limitations on decision-making are well-researched and include limitations such as cognitive bias and reliance on heuristics (Tversky & Kahneman, 1974), 'bounded rationality' (Simon, 1972) and 'satisficing' (Cyert & March, 1963).

We posit that people make flawed decisions not rooted in an understanding of fundamental causes of a problem, but rather in variations of emotional, motivational and cognitive mechanisms related to how individuals interpret situations. Shedding light on the mechanisms that influence individuals when interpreting what they have perceived (a problem) and deciding on a subsequent response (decision or action), could contribute to the area of process management by increasing the awareness of why individuals perceive events encountered in their day-to-day work as problems and why they choose to address such problems (Soong et al., 2020; Wedell-Wedellsborg, 2017). With this background, the research question is formulated as follows: How do emotional, motivational and cognitive mechanisms influence tampering in problem-solving situations?

The remainder of this paper is outlined as follows. Next, follows a brief overview of the tampering concept and related behavioural mechanisms described in previous research. Thereafter, the method is described, followed by the findings, discussion including future research and lastly conclusions.

### **Previous research**

This section presents the tampering concept as well as addresses research on tampering that has previously identified behavioural mechanisms leading to tampering.

### ***Tampering***

Identifying and removing root causes of problems is central to quality management (Deming, 1993; Juran, 2003). Deming (1993), following the views of Shewhart (1931), proposes a view of improvement where understanding of variation is key to understand problems. Otherwise, there is a risk of tampering (Deming, 1993), i.e. actions not directed at the fundamental cause of a problem that may lead to deterioration of a process or the process output (Smeds, 2021). To avoid tampering, common causes that occur naturally within a system should be reduced by changing the system while special causes that stem from causes outside of the system's natural behaviour should be removed by targeting the specific cause (Shewhart, 1931).

Some examples of real-life tampering can be found in research. One study investigated common cause variation in product thickness as sporadic problems that was solved by ad-hoc adjustment of machine settings, instead of changing the production process (Georgantzas, 2018). Another study focused on ad-hoc adjustment of process settings in a protein rendering process that decreased end-product quality instead of improved it (Van Gestel et al., 2015). Following these examples, which are recognisable in many contexts, a question is: what behavioural mechanisms influence individuals to take actions leading to tampering?

### ***Behavioural mechanisms influencing individuals to take tampering actions***

Previous research shows that first-line workers (Van Gestel et al., 2015) as well as managers (Ericson Öberg et al., 2017; Georgantzas, 2018; Gerst, 1995) make tampering actions. Van Gestel et al. (2015) found tampering in situations driven by productivity imperatives where operators 'feel productive' by conducting the work quickly enabling quick return to the control room. Further, novice operators showed misconceptions about their own level of knowledge and tended to overanalyse the available information and thus to make flawed decisions. Davis III (2000) as well as Georgantzas (2018) describe how first-line workers make tampering actions when for example needlessly and uncritically following flawed routines of adjusting machine settings established by management and when unreflectingly complying with instructions in certification standards.

From a management perspective, Ericson Öberg et al. (2017) report a tendency for managers to base their decisions about how to act on gut feeling and economic incentives rather than on hard facts. In addition, Georgantzas and Katsamakos (2008) suggest that tampering may be the result of managers 'muddling through', i.e. attempting to resolve a matter even though it is difficult or the prerequisites are insufficient.

The previous sections have described tampering as actions taken within a system that incorrectly addresses a problem and its causes and have highlighted some behavioural

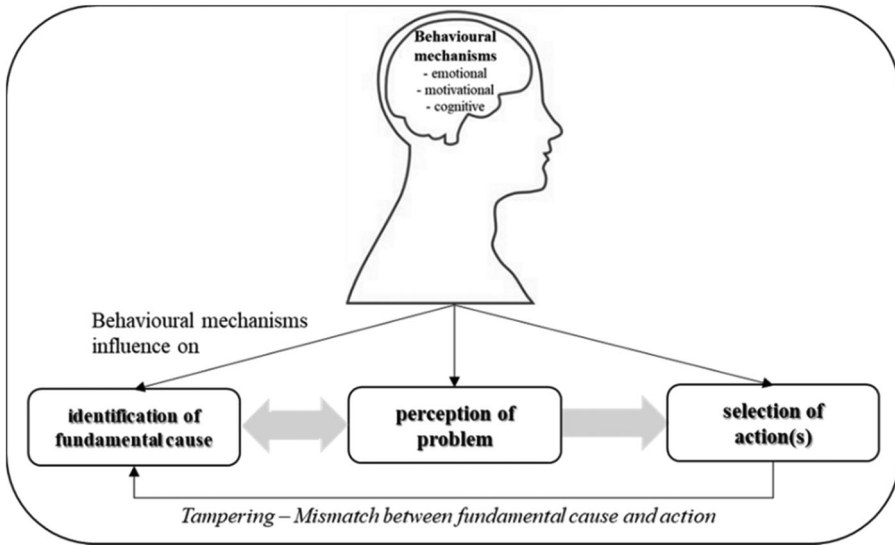


Figure 1. An analytical framework for understanding the influence of behavioural mechanisms on tampering.

mechanisms that lead individuals to take the tampering actions identified in previous research. Following this research, we further investigate the role of behavioural mechanisms in tampering and posit that individuals' interpretations of situations are not unbiased but are influenced by emotional, motivational and cognitive mechanisms (Figure 1). Identifying these mechanisms may help to understand some of the behaviours that make individuals take actions leading to tampering and consequently be able to change such behaviours to avoid tampering.

## Method

Following the research question of this paper, tampering and its related behavioural mechanisms can be described as multifaceted and complex dynamic processes, thus requiring careful consideration when selecting cases to study. Since tampering and behaviours leading to tampering are assumed to occur in the day-to-day work of individuals, the authors wanted to collect information-rich data that closely reflected the everyday experiences of these individuals (Van de Ven, 2007). The general strategy for selecting individual cases can therefore be described as following a *purposeful sampling strategy* (Patton, 2014) of episodes or encounters as cases (Miles & Huberman, 1994), here tampering situations. To access such information-rich descriptions of how individuals perceived and displayed different tampering situations and associated behavioural mechanisms, qualitative interviews were chosen as the data collection method (Kvale, 2007).

## Respondent selection

The respondent selection approach was two-fold. First, to be able to draw general conclusions on behavioural mechanisms in a variety of organisational settings, a vantage point for the research was to use a stratified, multiple-case design sampling approach (Miles & Huberman, 1994). This is appropriate for acquiring a broad sample of

conceptually similar cases (the concept in the cases being *tampering*) from which to possibly draw general conclusions related to the concept studied (Miles & Huberman, 1994). Moreover, replicating conceptually similar cases in different contexts enabled the researchers to extract differing and contrasting elements that, nevertheless, could be explained from anticipatable and conceptually rooted reasons (Yin, 2014). Hence, from a presumably very large pool of tampering situations cross sectors and organisations, a broad range of organisational contexts was initially selected with an aim to have a wide sample and cover the sectors of manufacturing, services and the public sector.

Second, to purposively pinpoint key respondents from these organisational contexts, a *key informant strategy* was applied (Patton, 2014). Representative respondents were thus primarily selected due to contextual factors (Miles & Huberman, 1994), such as being placed in conceptually relevant *settings* and experiencing conceptually relevant *events, people* and *relationships* (Boyatzis, 1998). Selection criteria such as work experience, position in the organisation and ability to offer rich illustrations of tampering were therefore used. The final selection of respondents represented a fine balance between representing different organisational contexts but also representing critical, in-depth and intensity-rich perspectives on tampering and its behavioural mechanisms. The final selection consisted of 17 respondents working in the sectors of municipal administration (5), real estate (4), cooling systems (2), aerospace/defence industry (2), education (1), technical consultancy (1), architecture (1) and the life-science industry (1). They held positions in top management (4), middle management (6) and as first-line employees (7) (Table 1).

The chosen two-fold selection approach of organisations and respondents was found to allow for both contrasting between contexts but also generalising across the whole range of contexts (Miles & Huberman, 1994), therefore making it possible to draw more general conclusions detailing the behavioural mechanisms leading to tampering.

### ***Data collection***

The interviews were carried out during 2019 and 2020. Prior to the interview, the respondents were introduced to Deming's (1993) tampering definition and asked to recall a minimum of two tampering situations they had experienced themselves based on this definition. Describing personal experiences of specific situations in relation to a phenomenon has been suggested as useful to enable the interpretation of behaviours linked to that phenomenon (Flanagan, 1954).

During the interviews, the personally experienced situations were described using the interviewees' own words. A semi-structured interview guide (Arksey & Knight, 1999) was used to ensure that all aspects, including action and behaviour sought by the authors were captured. The interviews resulted in descriptions of 48 tampering situations. After the exclusion of situations that did not match the definition of tampering, 39 situations remained. The interviews were held face to face or over by telephone, lasted between 31 and 60 min and were transcribed verbatim. Informed consent to participate was collected from all respondents, and the descriptions of the tampering situations were managed in a way that ensured anonymity. Complete transcripts of the interviews can be made available after request to the corresponding author.

### ***Data analysis***

Due to the limited amount of previous research on tampering in general and on behavioural mechanisms that lead individuals to tamper in particular, a primarily data-driven approach

Table 1. List of respondents.

Respondent	Organisational level	Sector	Gender	Work experience [years]	Organisation [Small/medium/large*]
1	Top-management	Aerospace/defence industry	Male	>30	Large
2	Top-management	Aerospace/defence industry	Male	10–19	Large
3	Top-management	Municipality administration	Female	>30	Medium
4	Middle-management	Municipality administration	Male	20–30	Medium
5	Top-management	Real estate	Female	10–19	Small
6	Middle-management	Municipality administration	Female	10–19	Medium
7	Middle-management	Municipality administration	Female	10–19	Medium
8	First-line employee	Real estate	Male	10–19	Small
9	First-line employee	Real estate	Female	10–19	Small
10	First-line employee	Real estate	Male	20–30	Small
11	Middle-management	Technical consultancy	Male	10–19	Medium
12	First-line employee	Education-University	Female	20–30	Medium
13	Middle-management	Cooling systems	Male	20–30	Small
14	First-line employee	Architecture	Female	20–30	Small
15	Middle-management	Life-science industry	Male	20–30	Medium
16	First-line employee	Cooling systems	Male	0–9	Large
17	First-line employee	Municipality administration	Female	20–30	Medium

Note: \*Small organisation: Annual Revenue €1–\$99 million, 1–499 employees; Medium organisation: Annual Revenue €100 million to \$1 billion, 500–9999 employees; Large organisation: Annual Revenue Over €1 billion, over 10,000 employees

was selected. The research in this article is based on the defined concept of tampering. However, when exploring more complex underlying processes leading to tampering, a more data-driven approach was considered necessary. A strength of a data-driven approach is that the analysis is not limited by previous research, thus allowing the researcher to be open to perspectives that have previously been overlooked (Boyatzis, 1998). Next, the three stages of data-driven thematic analysis, according to Boyatzis (1998) are described.

In stage I, sampling and design issues were established and a subsample of situations, to be analysed in stage II was selected (Boyatzis, 1998). Thirty-three situations were selected for further analysis in which the tampering act was clearly described and at

least one mechanism could be identified. From these, a random subsample of 10 tampering situations was selected to be used in stage II as the basis for the development of a preliminary coding framework.

In stage II, the raw data were reduced and themes were identified and compared across situations. These themes were then transformed into codes, and the reliability of the coding was evaluated (Boyatzis, 1998). The raw data were reduced by sorting the main points from each individual tampering situation under the main themes of *emotional*, *motivational* and *cognitive mechanisms* before a preliminary set of first-order themes was formulated. When subthemes had been developed for the 10 tampering situations in the subsample, they were scanned for similarity and possibility of groupings. Themes were transformed into codes in Nvivo alongside code descriptions. Each code was described using five elements: label, definition, description, inclusion criteria (indicators), exclusion criteria and examples (Table 2) (Boyatzis, 1998). To test the reliability of the codes, one of the authors not involved in the coding process was asked to code four tampering situations to check the interrater reliability (Boyatzis, 1998; Eisenhardt, 1989; Miles & Huberman, 1994). The interrater reliability was calculated as percentage of agreement by dividing the number of times the coders agreed on a code by the total number of instances of coding (Boyatzis, 1998) that was equal to 68%. After a ‘negotiated agreement’ (Campbell

Table 2. An example of the code structure for the main theme ‘cognitive mechanisms’ based on Boyatzis (1998).

Code level	Level 0 (main theme)	Level 1
<i>Label</i>	Cognitive mechanisms	Make a ‘good enough’ response
<i>Definition</i>	Cognition refers to the mental act of acquiring, recognising and processing information	Identifying a satisfactory solution without exploring additional possibilities
<i>Description</i>	Describes reasons why a problem is interpreted in a certain way and why it is solved in a certain way	Describes reasons such as making limited or no analysis and selecting an insufficient solution
<i>Criteria</i>	<p>Inclusion</p> <ul style="list-style-type: none"> <li>– Why a problem is identified as a problem</li> <li>– Why a certain solution is selected</li> </ul> <p>Exclusion</p> <ul style="list-style-type: none"> <li>– Emotional mechanisms</li> <li>– Motivational mechanisms</li> </ul>	<p>Inclusion</p> <ul style="list-style-type: none"> <li>– Selecting a previously used solution that is not sufficient for the particular problem</li> <li>– Selecting a ‘top-of-mind’ solution that is not sufficient for the particular problem</li> </ul>
<i>Examples</i> <i>[translated to English]</i>	‘... you go on what [problems] you hear about without having the complete picture’	‘... we identified factors that we can influence, because we thought that [this factor] fluctuates much more than what we can influence in the business. However, had we looked at this factor separately, then maybe we’d have made other decisions about the business. Instead of, like this example, when we cut back in our development organization’

Table 3. Mechanisms triggering tampering identified in the tampering situations.

Mechanism	Internal/External trigger	Sub-mechanism	Number of tampering situations
<i>Emotional</i>	Internal	Uncertainty/fear of consequences	12
		Stress	5
		Fear of conflict	2
		Pride	1
		Hopelessness	1
	External	Mistrust	6
		Disappointment	5
		Frustration	2
		Surprise	2
<i>Motivational</i>	Internal	Perceived incentives	
		– Economic gain	7
		Sense of doing something important	8
	External	Avoid guilt for not doing enough	5
		Perceived incentives	
		– Relational incentives	4
		Compliance with internal routines	7
Compliance with perceived external expectations	5		
<i>Cognitive</i>	Internal	Make a ‘good enough’ response	8
		Overconfidence	4
		Framing of a problem influences action	3
		Past events influence action	2
		Sunk-cost fallacy	1

et al., 2013), the authors came to a consensus on the coding results and how to proceed in stage III. The reliability after the discussion was 90% which was considered as satisfactory. The coding and code structure were discussed among the coders to identify differing interpretations and possibly adjust the description or application of a code.

In stage III, the codes were applied to the remaining 23 situations and thereafter the results were interpreted (Boyatzis, 1998). A summary of the themes and the number of tampering situations is presented in Table 3.

## Findings

In this section, the findings from the analysis are presented. An example of a tampering situation in the real estate sector concerns the change in the frequency of service rounds from weekly to daily due to a customer’s concerns about problems that according to the service provider were due to common cause variation. Another example is in the educational sector, where a manager calls the employees working in the student health team to crisis meetings every time a concerned principal calls with what was considered a special case. According to the team, most of these were routine cases that did not need special attention.

The analysis revealed nine emotional, six motivational and five cognitive mechanisms (Table 3). More than one mechanism might originate from the same situation.

### **Emotional mechanisms**

Nine emotional mechanisms, originating from 21 tampering situations, were identified. The most common emotions were *uncertainty or fear regarding potential consequences* (12), *disappointment* (5), *mistrust* (5) and *stress* (5).

*Uncertainty or fear regarding potential consequences*, i.e. fear of making things worse by not acting, appears to be a strong trigger for tampering. This feeling did not concern negative consequences directed towards oneself but towards the organisation. The respondents seem to adhere to the idiom ‘better safe than sorry’.

The respondents reporting *fear of conflict* and a *feeling of hopelessness* all stated that they acted because it seemed ‘pointless’ to argue against taking action since they knew what the outcome would be. The individual thus went ahead with the solution suggested by others even though it was considered faulty or unnecessary. The emotions of *surprise* and *stress* are linked, according to the findings, to a sense of urgency and being unexpectedly presented with a problem triggered rapid responses, frequently involving acting directly on second-hand information:

When someone says “Oh, now there’s a crisis and disaster” then you take their word for it ... (R7)

The findings further indicate that the mechanisms *mistrust*, *disappointment* and *frustration* were triggered by the perception that things were not being done in the right way or quickly enough. Without considering the whole picture or what is the best common solution, the individual takes the matter into their own hands, as illustrated by the following quote:

... the research leaders, got frustrated after a while since [the project] was not being delivered the way they expected it, and they chose to do it in a different way. (R11)

The only emotional mechanism described as positive was *pride*. A manager reported feeling proud of being asked by his/her employees to help with a problem. This eagerness to support the employees resulted in tampering.

### **Motivational mechanisms**

The motivational mechanism is reflected in internally or externally influenced reasons that evoke an individual’s interpretation and action. The analysis revealed six motivational mechanisms originating from 28 tampering situations. The most frequently identified mechanisms were *incentives* (11) in terms of *economic gains* (7) or *relational incentives* (4), *compliance with internal routines* (7) and *sense of doing something important* (6).

Being driven by the mechanism incentives involves a desire to maintain or enhance existing financial resources or relationships without regard to what facts and what is best for the whole organisation or society. *Economic gains* refers to actions driven by a strive towards sub-optimised economic benefits. *Relational incentives* denotes a striving towards upholding good relations, for example, with customers, to ensure that they are satisfied and will continue to be loyal customers or with voters to increase the likelihood of gaining their votes in the next election.

It’s clearly about “buttering up” the voters. To gain voters by investing in objects that create a good reputation among the citizens. (R3)

Another identified mechanism is a desire to *meet external expectations* for example to comply with directives provided by authorities irrespective of whether they are supportive or not. This mechanism differs from relational incentives in the lack of direct communication between the influential actors for example political leaders or auditors and the practitioner.

A *sense of doing something important* sometimes leads individuals to become carried away to make changes that do not consider others' perspectives or what is best for the whole organisation. A problematic situation arising from wanting to stand up for values that are considered important is illustrated by the following quote:

[The HR department] wanted, they had very good intentions ... they wanted people to talk about how they experience their physical and mental work environment ... But if we just talk about these things and nothing [is said] about why we're in the workplace and what we should accomplish, the performance appraisal meetings are incomplete. (R4)

The identified mechanism *compliance with internal routines* shows that following some routines set up by organisations without questioning whether they would lead to a satisfactory output can lead to tampering. The analysis indicates that there are situations where individuals are forced or expected to act in a certain way, as well as situations where they simply act as they have always acted.

The findings imply a tendency for individuals to prefer to act too much rather than too little, and thus be able to state that: 'I did everything in my power to resolve the event', *avoiding guilt about not doing enough*. The guilt is perceived as being internally triggered by wanting to perform their best rather than externally by being blamed or held accountable by others.

At the meeting, the project manager felt: "Top management is present so I should address this problem". This person's manager who is also present looks impatiently at [him/her] as to say, "why does this problem occur?". (R2)

### ***Cognitive mechanisms***

Cognitive mechanisms are reflected in the different types of more or less 'erroneous reasoning' used to draw conclusions about when and how to act. Five cognitive mechanisms originating from 17 tampering situations were identified during the analysis. Mechanisms such as *selecting a 'good enough' solution* (8), *overconfidence* (4) and *framing of the problem* (3) influenced actions.

The mechanism to *make a 'good enough' response* was related to a lack of proper problem and action identification, resulting in choosing the action that was 'front of mind'. 'Front-of-mind' solutions may be adequate where the problem causes are known; however, if the solution does not address the actual causes, the problem will remain. One respondent stated that this simplified problem-solving approach seemed appropriate at the time; however, its insufficiency became evident in hindsight when the negative effects of the decision became evident.

We had poor financial results that we had to do something about, so we worked with things that we could influence ... If we had taken a closer look, then we probably would have made other decisions instead of what we did in this example, where we cut back in our development organisation. (R1)

The mechanism *overconfidence* implies that some decisions lead to tampering due to the individuals' *overconfidence* in their own decision-making competence. This *overconfidence* originated in the individuals' perception of having all the necessary information and experience.

The operators often blamed the problems and their actions on the material, since they meant that they had mastered the process. [The assigned team] however saw that there were many possible parameters that could be the causes for the problems. (R13)

*Recalling of past events* was identified as a trigger of tampering where negative experiences of similar events influenced decisions to act in order to avoid expected negative consequences.

Another mechanism regards when a problem is not experienced first-hand and there is a need to judge others' assessments. *How the problem was framed* by the informer, e.g. as a 'crisis' or 'extremely urgent' appears to impact the action taken. The respondents suggested that neglecting to personally assess a problem's seriousness and instead, 'take their word for it', may lead to tampering if it turns out to be a false alarm.

One tampering situation showed tendencies of being triggered by the *sunken-cost fallacy* where investments in the development of a new project management system were not stopped even though the employees who were supposed to use the system stated that they would not be able to do so because it was insufficient for its intended purpose.

## Discussion

How do emotional, motivational and cognitive mechanisms influence tampering in problem-solving situations? This paper increases the understanding of why some situations encountered are perceived as problems and why these are addressed. This was achieved by studying emotional, motivational and cognitive mechanisms triggering tampering. Twenty mechanisms were identified.

A main finding concerns the influence of negative emotions as a trigger for actions leading to tampering. Being in a negative emotional state has previously been suggested to lead individuals to perceive problems as worse than they actually are (Schwarz & Skurnik, 2003) and influence individuals to make decisions that deviate from their cognitive assessments (Loewenstein et al., 2001). In this study, this led to two opposing behaviours. Owing to, e.g. a feeling of hopelessness, one behaviour was to take a passive stance and allow decisions that felt wrong to be made. One example was managers who described sometimes not having the strength to resist employees demanded to have things their way. The other behaviour, to act more forcefully than they otherwise would was triggered by the perceived severity of problems and their consequences. Events that otherwise were considered as 'normal' were magnified and a fear of severe consequences made acting appear needed. This is in line with Lerner et al. (2015) stating that individuals who feel anxious about the consequences of their decisions are more prone to making a safer choice.

It is a commonly held view in quality management that improvements should be based on a systematic and conscious analysis of facts (Dean Jr & Bowen, 1994; Deming, 1993; Hackman & Wageman, 1995; Juran, 2003). Even so, few respondents followed this advice when encountering everyday problems. Similar to previous research (Georgantzas, 2018; Van Gestel et al., 2015), this study found that some individuals acted unconsciously because their focus was on compliance with routines rather than exploring other solutions. Not questioning current routines may be equally as bad as acting when there is no need to act, because it may uphold faulty routines that cause systematic errors.

Some respondents were aware of their actions, but often not of their negative consequences. Individuals want to feel productive in the workplace (Van Gestel et al., 2015) and acting on problems is seen as a sign of independence and an ability to take initiative (Tucker et al., 2002). The eagerness to tackle 'problems' may be because of what Tucker et al. (2002) describe as a 'heroic attitude' where individuals put pride in their ability to singlehandedly solve problems. Individuals with a background in quality management are taught to act with personal agency and take initiative to solve problems and improve the quality (Ababneh, 2020; Deming, 1993; Juran, 2003). Thus, in the case of tampering, the safer choice may be to always act, based on a belief that action is expected and associated with improvements. Having engaged employees is often desirable; however, this

engagement is worth little if hasty changes are implemented that turn out to have negative consequences difficult to reverse.

While it may seem that tampering is mainly internally triggered, with actions taken on an individual's initiative, external forces were also observed to influence people's behaviour. Individuals seldom act in complete isolation, but surrounded by colleagues, managers, politicians, customers, etc. with different intentions, opinions and agendas. While having differing perspectives is sometimes desirable, this study shows that aspects such as relationships, power balance and trust may influence individuals' interpretation of problems and result in tampering.

There is no simple solution to the issue of how tampering actions can be prevented or reduced in organisations. However, for quality managers and other leaders of improvement initiatives, this study points to two key areas of actions that have been suggested and elaborated on by the respondents in the study. First, the realisation that improvement initiatives are not always based on facts make it critical to set aside time and resources for planning and analysis when selecting and starting improvement initiatives. This could, for example, be supported by revitalisation of classic approaches to quality improvements such as the plan-do-study-act cycle that has an explicit focus on a planning phase preceding improvements actions – a phase that could support conscious reflections before acting. Second, realising the higher risk of tampering when individuals feel anxious, unsafe or have any negative emotions calls for action in empowering individuals and creating an environment in which reflections are encouraged before acting. This action points to the critical role of managers to encourage reflections and create room and time for it, especially in situations with emotional stress such as, e.g. in times of poor financial results.

Selection of relevant cases to encapsulate the highly complex phenomena of tampering and to identify equally complex behavioural mechanisms leading to tampering requires careful consideration. It can be debated if the selection of cases is truly representative to make claims for generalisation. General conclusions therefore need to be modest, and it can definitely be argued that more research is required to further strengthen the results of this paper. However, as a first step, this paper can serve as a guide into more elaborate studies on the concept of tampering and its underlying behavioural mechanisms. Additional studies are encouraged to broaden the selection of cases even further and enable more analytical generalisation.

### ***Future research***

There are several possible avenues for future research. One avenue is related to the methodological limitations that naturally call for more research to, for example, perform in-depth studies on tampering in specific contexts, or conduct survey studies to enhance opportunities for generalisation. Another possible avenue for future research is related to digitalisation as a contemporary challenge as well as an opportunity for managers (e.g. Elg et al., 2021). The finding that tampering is influenced by emotions and motives is interesting in relation to this changing digital landscape. Kahneman et al. (2021) argue, for instance, that automated procedures often produce better results in decision-making processes, as they leave out flawed behaviour of humans. This would imply that automated procedures might lower the risks of overdoing things in organisations thereby reducing variation and tampering. A question in line with this is how digital technology can be embedded in new ways of working with quality management and improvements to minimise tampering. It would also be of interest to study tampering in relation to digitally connected service where customers expect very fast responses and actions to their feedback

(Birch-Jensen et al., 2020), hence the pressure for action increases and, perhaps, also the tampering. Thus, in relation to digitalisation there are future avenues of research to explore both increased, and decreased risks for tampering.

## Conclusions

Individuals are constantly encountering problems in their daily work. This study highlights the concept of tampering and identifies behavioural mechanisms that lead individuals to act in ways that cause tampering by addressing the emotional, motivational and cognitive mechanisms that may influence individual's decisions. This study shows that multiple mechanisms influence an individual's perception of what is a problem or not, and how it should be addressed. These findings are not only useful for understanding how individuals act when encountering problems at work, but also for understanding how tampering can be avoided. Increasing general awareness of what mechanisms trigger actions leading to unsatisfactory outcomes could improve individuals' problem-solving ability and, ultimately, organisational performance.

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## ORCID

Magdalena Smeds  <http://orcid.org/0000-0001-6855-0664>

Jason Martin  <http://orcid.org/0000-0002-5702-4885>

Mattias Elg  <http://orcid.org/0000-0003-4730-5453>

Ida Gremyr  <http://orcid.org/0000-0001-7292-7217>

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